

10/577787

IAP17 Rec'd PCT/PTO 28 APR 2006

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

. Original claims 1-7 (cancelled)

Claim 8 (new): A pipeline closing apparatus comprising:

a lid member attachable to a downstream end portion of a sluice valve or an end portion of a pipe portion connected thereto, the lid member adapted to close an end opening of a branch pipe connected to and diverging from a fluid transmitting main and having the sluice valve disposed therein;

a cylindrical first control shaft extending through the lid member to be axially slidable in a sealed condition;

a second control shaft extending through the first control shaft to be axially slidable;

a first pressing plate attached to an inward end region of the first control shaft;

a second pressing plate attached to an inward end region of the second control shaft upstream of the first pressing plate;

an elastic annular member disposed between the first pressing plate and the second pressing plate and elastically deformable to a diameter-increased position for tight contact with an inner peripheral surface of the branch pipe by being clamped and pressed between both of the pressing plates from axial directions, thereby blocking the inner peripheral surface and outer peripheral portions of the pressing plates; and

a retaining device provided between the inward end region of the second control shaft and the second pressing plate, and including engaging link pairs flexing and bulging to a diameter-increased position to engage with positions upstream of a position blocked by the elastic annular member in response to outward sliding movement of the second control shaft relative to the first control shaft,

wherein a reversal preventing device is provided which, when the engaging link pairs of the retaining device are stretched to a diameter-reduced position, contacts and limits the engaging link pairs to an outwardly bent position where flexing pivotal portions of the engaging link pairs project radially outward.

Claim 9 (new): The pipeline closing apparatus as defined in claim 8, wherein the reversal preventing device includes a tubular elastic correcting member mounted on the inward end region of the second control shaft for contacting at least one engaging link when the engaging link pairs stretched to the diameter-reduced position reach a predetermined outwardly bent position.

Claim 10 (new): The pipeline closing apparatus as defined in claim 8, wherein the reversal preventing device includes a ring-shaped elastic correcting member for contacting one of the engaging links when the engaging link pairs stretched to the diameter-reduced position reach the predetermined outwardly bent position, the elastic correcting member being mounted on a mounting tubular member fitted on the inward end region of the second control shaft and having a connecting element pivotably connected to an end portion of one of the engaging links.

Claim 11 (new): The pipeline closing apparatus as defined in claim 8, wherein the elastic annular member has a cylindrical shape and has an axially-arranged middle portion with a diameter that is larger than the diameter of axially-arranged opposite end portions.

Claim 12 (new): The pipeline closing apparatus as defined in claim 11, wherein the axially-arranged middle portion of the elastic annular member has an outer peripheral surface with a partly spherical shape to project most outwardly at an axial middle part thereof.

Claim 13 (new): The pipeline closing apparatus as defined in claim 8, wherein both of the pressing plates include annular holding portions to be in contact with outer circumferential surfaces of axially opposite end portions of the elastic annular member.

Claim 14 (new): A pipeline closing apparatus as defined in claim 12, wherein the large diameter middle portion of the elastic annular member has an inner peripheral surface that is shaped partly spherical to project most outwardly at an axially middle part thereof.

Claim 15 (new): A pipeline closing apparatus as defined in claim 9, wherein the elastic annular member has a cylindrical shape and has an axially-arranged middle portion with a diameter that is larger than the diameter of axially-arranged opposite end portions.

Claim 16 (new): The pipeline closing apparatus as defined in claim 15, wherein the axially-arranged middle portion of the elastic annular member has an outer peripheral surface with a partly spherical shape to project most outwardly at an axial middle part thereof.

Claim 17 (new): The pipeline closing apparatus as defined in claim 16, wherein the large diameter middle portion of the elastic annular member has an inner peripheral surface that is shaped partly spherical to project most outwardly at an axially middle part thereof.

Claim 18 (new): The pipeline closing apparatus as defined in claim 10, wherein the elastic annular member has a cylindrical shape and has an axially-arranged middle portion with a diameter that is larger than the diameter of axially-arranged opposite end portions.

Claim 19 (new): The pipeline closing apparatus as defined in claim 18, wherein the axially-arranged middle portion of the elastic annular member has an outer peripheral surface with a partly spherical shape to project most outwardly at an axial middle part thereof.

Claim 20 (new): The pipeline closing apparatus as defined in claim 19, wherein the large diameter middle portion of the elastic annular member has an inner peripheral surface that is shaped partly spherical to project most outwardly at an axially middle part thereof.